

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

LightSquared Technical Working Group
Report

IB Docket No. 11-109

COMMENTS OF AVIATION SPECTRUM RESOURCES, INC

Aviation Spectrum Resources, Inc. (“ASRI”) hereby submits its comments on the testing conducted by LightSquared and various GPS interests as referenced in the Commission’s June 30, 2011 Public Notice¹ As noted herein and as demonstrated in the testing described in the Report,² LightSquared’s use of its upper 10 MHz of spectrum for base station transmissions will cause such harmful interference to reception of GPS as to preclude such use by aviation. While restricting operations to its lower 10 MHz of spectrum (1526 – 1536 MHz) and limiting transmitted power to 32 dBW eirp holds the possibility of improving substantially the compatibility between LightSquared’s operations and aviation’s use of GPS, even this operation needs further testing, particularly with respect to its effect on the Wide Area Augmentation System (WAAS) so critical to many aviation uses of GPS.

ASRI, as the successor to Aeronautical Radio, Inc. (“ARINC”), is the communications company of the air transport industry, acts as the industry licensee in the aeronautical enroute and fixed services, and serves as the industry frequency manager for United States civil

¹ Public Notice, DA 11-1133 (June 30, 2011).

² The LightSquared Working Group, Final Report, June 30, 2011 (“Report”).

aviation.³ As such, ASRI is the licensee for more than 5,000 aeronautical enroute stations and is responsible to the FCC and the industry for the effective and efficient use of those resources for the safe and economic operation of aircraft in U.S. airspace.

GPS plays a critical and increasingly essential role in the safe and efficient operation of aircraft. Thus, GPS is used for

- Enroute and terminal area navigation
- Instrument approaches and flight procedures
- Surveillance (i.e. the next generation of air traffic control)
- Traffic alerting and collision avoidance
- Terrain awareness and warning
- Cockpit position display
- Low cost attitude and heading reference systems
- Emergency location and airborne search and rescue
- Synthetic vision

In addition to the Report, Special Committee 159 of RTCA, Inc., issued its “Assessment of the LightSquared Ancillary Terrestrial Component Radio Frequency Interference Impact on GNSS L1 Band Airborne Receiver Operations, DO-327.”⁴ The RTCA Report offered the following

³ ASRI is owned by members of the civil aviation community. The board of directors of ASRI is advised in spectrum management matters by the Aeronautical Frequency Committee, which consists of members from the major passenger and cargo air carriers, the National Business Aircraft Association (“NBAA”), the Aircraft Owners and Pilots Association (“AOPA”), SITA, ARINC, and the Helicopters Association International (“HAI”). In addition, non-voting representation is held by the International Air Transport Association and the Air Transport Association of America.

⁴ RTCA, Inc. (formerly the Radio Technical Commission for Aeronautics) is a not-for-profit entity that functions as a federal advisory committee for the development of consensus based recommendations on contemporary aviation issues involving electronic systems in support

recommendations with respect to the compatibility of LightSquared proposed operations and aviation uses of GPS:

1. From an aviation perspective, LightSquared upper channel operation should not be allowed.
2. Further study is recommended to more carefully determine a refined terrestrial base station power versus frequency limit considering:
 - a. determination of the lowest path loss for the low altitude enroute scenario.
 - b. confirmation of acceptable receiver susceptibility for GPS initial acquisition and signal tracking in the presence of 10 MHz bandwidth terrestrial network interference.
 - c. computation of the cumulative probability distribution function for the aggregate path loss.

Both the Report and the RTCA Report noted the effect that LightSquared signal could have on aircraft reception of the WAAS, which supplies an augmentation signal to enhance the accuracy of GPS so that it may be used for instrument approaches on landing – an especially important safety feature for the large number of airports that are not equipped with older instrument landing systems. WAAS supplies augmentation data via L band transponders on geosynchronous satellites. With reception of this signal GPS receivers typically can achieve accuracy of +/- three meters horizontal and vertical. Loss of WAAS at critical times in flight could take away the ability of a pilot to land safely. Accordingly, it is essential that WAAS capability be maintained.

While the review conducted by the Working Group and by RTCA SC-159 clearly showed that LightSquared transmissions on its upper frequency are not compatible with WAAS GPS operations, the testing did not address the impact of lower band operation on aviation's WAAS reception. Unless further testing demonstrates that LightSquared's operations in its

of aviation.

lower band pose no threat to the reception of WAAS signals by aviation, commercial operation of the LightSquared system should not be permitted. Similarly, the recommendations of RTCA-159 for additional examination of the compatibility of LightSquared proposed operations should be completed before commercial operation is permitted.

Conclusion

The testing reflected in the Report and in the RTCA Report underscore the challenges confronting the Commission as it looks for ways to permit LightSquared to deploy some 40,000 high-powered base stations in spectrum that was allocated for space-to-earth transmissions from mobile satellites – a use that was compatible with other space-to-earth transmissions in the adjacent radio navigation satellite service. Limiting operation by LightSquared to the lower band and reducing base station power to 32 dBW are promising mitigation strategies, but threats remain and must be addressed before commercial service is authorized.

Respectfully submitted,

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